

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

To:

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/US2004/018536

International filing date (day/month/year)
10.06.2004

Priority date (day/month/year)
12.06.2003

International Patent Classification (IPC) or both national classification and IPC
F01N3/035, F01N3/20, F01N3/025, F01N3/08

Applicant
DONALDSON COMPANY, INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**International application No.
PCT/US2004/018536

IAP20 Rec'd PCT/PTO 12 DEC 2005

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material:
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing:
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
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Box No. II Priority

1. ☒ The following document has not been furnished:

☒ copy of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(a)).

☐ translation of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. ☐ It has not been possible to consider the validity of the priority claim because a copy of the priority document was not available to the ISA at the time that the search was conducted (Rule 17.1). This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

4. Additional observations, if necessary:

Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	4-9, 11, 12, 14-21, 24-25, 28
	No: Claims	1-3, 10, 13, 22, 23, 27
Inventive step (IS)	Yes: Claims	
	No: Claims	1-28
Industrial applicability (IA)	Yes: Claims	1-28
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

**WRITTEN OPINION OF THE
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AUTHORITY (SEPARATE SHEET)**

International application No.

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Item V.

1.1. Document US 6 487 852 (D1) discloses (see column 1, line 7 - column 3, line 18; figure 1):

a method for injecting fuel into a transient exhaust stream (12) of an exhaust system (10), the method comprising:
selecting a control volume within the exhaust system; and
using a model derived from a transient energy balance equation for the control volume to determining the rate for fuel to be dispensed into the exhaust stream (12).

Therefore, the present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1 is not new in the sense of Article 33(2) PCT.

1.2. Document US 2002/178716 (D2) discloses (see § [016]-[017]; figure 1):

An exhaust system (10) comprising:

an exhaust conduit (16);
a catalytic converter (26) positioned in the exhaust conduit;
a diesel particulate filter (19) positioned in the exhaust conduit downstream of the catalytic converter (26);
a fuel injection nozzle (29) positionned upstream from the catalytic converter;
a first temperature probe (31) for sensing a gas temperature in the exhaust conduit, the first temperature probe beeing positionned between the catalytic converter and the diesel particulate filter;
a controller that uses data from the first temperature probe (31) as well as mass flow data (97) to determine a rate of fuel to be injected into the exhaust conduit by the fuel injection nozzle (29) to reach a temperature at the diesel particulate filter suitable for causing regeneration.

Therefore, the present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 10 is not new in the sense of Article 33(2) PCT.

1.3. Document EP 1 149 991 (D3) discloses (see § [001]-[012]; figures 1-3):

An exhaust system comprising:

an exhaust conduit (90);
a fuel injection nozzle (110) positionned into the exhaust conduit (90);

an air line for supplying air to the nozzle (114);
a fuel line (106 for supplying fuel to the nozzle (114); and
a controller (120) for determining a rate of fuel to be injected into the exhaust conduit.

Therefore, the present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 22 is not new in the sense of Article 33(2) PCT.

2.1. Dependent claims 2-9, 11-21, 22-28 do not appear to contain any additional features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT with respect to novelty or inventive step, because the subject-matter of claims 2, 3 are already known from EP 1 273 773 (D4) (see § [021]-[071]; figure 1), the features of claim 13 are already known from D2, the features of claim 23, 27 are known from D3, the features of claims 5, 7-9 are known from US 5 950 422 (D5) (see col. 2, line 3 - col. 7, line 16; figures 1-3) in combination with D2, the features of claims 15, 17 are known from D3 in combination with D2, and the features of claims 4, 6, 11, 12, 14, 16, 18-21, 24-26, 28 are a matter of design choice falling within the normal activity of the person skilled in the art.

Item VII.

3.1. Although claims 10, 22 have been drafted as separate independent claims, they appear to relate effectively to the same subject-matter and to differ from each other only with regard to the definition of the subject-matter for which protection is sought. The aforementioned claims therefore lack conciseness and as such do not meet the requirements of Article 6 PCT.

3.2. Independent claims 1, 10, 22 are not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art being placed in the preamble (Rule 6.3(b)(i) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).

3.3. The features of the claims are not provided with reference signs placed in

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parentheses (Rule 6.2(b) PCT).